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Trends in Racial Discrimination Experiences for Asian Americans During the COVID-19 Pandemic

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Abstract

Background Asian Americans (AAs) are experiencing increased rates of anti-Asian racism during COVID-19. Experiences of racism, whether personal or collective, constitute stress and psychosocial trauma that negatively impact mental and physical health.

Objectives Examine subgroup differences in rates of personal experience of discrimination and COVID-related collective racism and how each is associated with mental and physical health for AAs.

Methods Nationally representative data from the 2021 Asian American and Native Hawaiian/Pacific Islander COVID-19 Needs Assessment Project were used to estimate prevalence rates of discrimination and average COVID-related collective racism scores for AAs (unweighted $N = 3478$). We conducted logistic and linear regression models to examine subgroup differences by sociodemographic factors. We also conducted hierarchical logistic regression models to examine associations between racism and psychological distress and health decline.

Results Twenty-four percent of AAs (95% CI: 21.6, 25.6) reported experiencing discrimination during the first year of the COVID-19 pandemic. Subgroup analyses revealed that Chinese, younger adults, and AAs who completed the survey in an Asian language were significantly more likely to experience discrimination compared to their counterparts. For COVID-related collective racism, subgroup analyses revealed that Chinese, women, and adults ages 25–44 were more likely to report experiences of collective racism compared to their counterparts. Both discrimination and collective racism were independently associated with negative mental and physical health.

Conclusion Discrimination and COVID-related collective racism are associated with negative mental and physical health outcomes for AAs. Results point to vulnerable AA subgroups and the need for targeted public health efforts to address racism in the context of COVID-19.

Keywords Asian American · Mental health · Physical health · Anti-Asian racism · COVID-19

Introduction

During the COVID-19 pandemic, Asian Americans (AAs) have experienced economic, health, and social stressors from COVID-19 as well as increased and COVID-specific anti-Asian racism [1–4]. Anti-Asian racism in the USA, however, is not a new phenomenon that begun during COVID [5]. Stereotypes of AAs in mainstream US culture—such as those that portray AAs as perpetual foreigners—encourage xenophobic prejudice, bias, and discrimination against AAs and the invisibility of AAs in policy discourse [6, 7]. Historical examples of racism include the Chinese Exclusion Act of 1882, which was the first restrictive immigration law in the USA and the first to specifically restrict immigration based on race [8]. AAs have also been scapegoated and blamed

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for bringing diseases throughout US history (e.g., “Yellow Peril” in the nineteenth century, bubonic plague outbreak in San Francisco in the early twentieth century, SARS 2003 outbreak) [9, 10].

Furthermore and importantly, despite the pan-ethnic racialization of Asian Americans as a homogenous collective racial group, AAs are a diverse group made up of many ethnicities, histories of migration and settlement, and differential experiences. Previous research shows that the likelihood of being targeted for anti-Asian racism varies for different groups within the AA community [11, 12]. Anti-Asian racism related to COVID-19 is specifically Sinophobic, that is, fearful of or holding contempt toward China and Chinese [13]. Relatedly, Stop AAPI Hate found that the Chinese reported the highest number of hate incidents compared to other racial/ethnic groups [14]. Other axes of intersectional experiences and lives of AAs are important. Stop AAPI Hate also found that women reported twice the number of hate incidents compared to men [15]. Women experience anti-Asian racism differently from men due to the racialized sexism reimagining Asian women as exotic, hypersexual, and submissive [7, 16]. This perception of Asian women has a long history in the USA; the Page Act of 1875, for example, essentially prohibited the immigration of Chinese women to the USA due to stereotypes of Asian women as prostitutes [17].

As COVID-19 spread and grew into a public health crisis and global pandemic, this pattern of associating AAs with diseases through racialization of COVID continued with the effect of increased anti-Asian racism and hate incidents [14, 15]. COVID-related anti-Asian racism manifested in various ways, such as racial scapegoating (e.g., the use of phrases such as “Wuhan virus” and “Chinese virus”), ostracization (e.g., foreigner stereotype, xenophobia toward AAs), denigration (e.g., defaming and ridiculing Asian businesses and culture), monolithic racialization (e.g., ignoring differences among AAs), and dehumanization (e.g., physical assaults, viewing AAs as animals, viruses, contagious diseases) [18]. These forms of anti-Asian racism in the context of COVID came from the US government leaders [14, 15], mainstream media outlets [19], and online social media [17–21]—translating to anti-Asian rhetoric as well as interpersonal discrimination and violence [22]. Stop AAPI Hate, which opened an online portal for self-reports of anti-Asian and Pacific Islander hate crimes in March 2020, received 1135 reports of hate incidents in its first 2 weeks of operation and over 10,905 reports from March 2020 to December 2021 [11, 12]. Although, the data collected through Stop AAPI Hate’s online portal is self-reported and could be biased estimates. However, other studies confirm high rates of anti-Asian discrimination. In one study surveying Chinese parents and youth, over half reported experiencing COVID-19 discrimination in person [23]. Furthermore, a large national study

of Asian American and Native Hawaiian/Pacific Islanders (NH/PI) by Ta Park and colleagues found that 60.7% experienced discrimination during COVID-19 with a great deal of subgroup differences ranging from 41 among NH/PI to 80% among Hmong [24].

As a multilevel system, racism includes the ideology and assumption of the inferiority of certain racial and cultural groups [25]. This ideology permeates the societal culture, infiltrating institutions, structures, and individual values and beliefs [25]. Experiences of racism take many forms across multiple levels, including interpersonal racism (e.g., microaggressions, verbal and physical harassment), chronic-contextual stress (e.g., social structure, political dynamics), racism-related life events (e.g., housing discrimination), vicarious racism (e.g., observing or learning about others’ experiences of racism), and collective experiences of racism (e.g., stereotypic portrayals, lack of representation, or economic conditions of group) [26].

Experiences of racism constitute chronic and acute stress and psychosocial trauma that negatively impact mental and physical health [25–28]. A multitude of research studies confirm this is true for AAs: experiences of racism and discrimination are associated with symptoms of depression and anxiety and physical health complaints [26, 29–33]. This negative impact on mental health is also documented for indirect experiences of racism (e.g., vicarious racism) [34, 35]. A growing body of research has found a similar positive association between COVID-related anti-Asian racism and increased symptoms of anxiety and depression [36–39]. There are few studies, however, that examine the relationship between discrimination and AAs’ physical health [9, 26].

AAs may be experiencing heightened COVID-related collective racism during COVID. Only a few studies have examined the impact of COVID-related collective racism on mental health, finding the expected association with increased mental health symptoms [35, 40, 41]. However, no study, to our knowledge, has specifically examined the impact of COVID-related collective racism on the mental or physical health of AAs.

Using nationally representative data from a large AA sample, in the present study, we seek to understand the impacts of both discrimination (i.e., direct and interpersonal racism) and COVID-related collective racism (i.e., racialization of COVID) on AAs’ mental health and physical health decline. Although theory conceptualizes discrimination and collective racism as qualitatively distinct forms of racism [26], to our knowledge, no published studies have disentangled the unique or interactive contributions of these forms of racism on psychological distress or physical health decline. Because research has suggested patterns of differential experiences of racism for various AAs during the COVID-19 pandemic descriptively [11, 12], we first examine subgroup differences by age, income, education, nativity, survey language, and

geographical US region in discrimination and collective racism in the multivariate framework and then look at their associations with health outcomes. Specifically, we hypothesize that (1) Chinese respondents will have significantly higher odds of reporting discrimination and collective racism compared to other ethnic groups, and (2) women will have significantly higher odds of reporting discrimination and collective racism compared to men. We further hypothesize that, after controlling for sociodemographic factors and other COVID-related stressors, discrimination and COVID-related collective racism are separately associated with psychological distress and physical health. Finally, we explore potential interaction effects between these two forms of racism on psychological distress and physical health.

Method

Sample

Data from the Asian American and Native Hawaiian/Pacific Islander (AA & NH/PI) COVID-19 Needs Assessment Project were used. The project was part of a larger study examining the impact of COVID-19 on communities of color [42]. Conducted by the Asian American Psychological Association (AAPA), the AA & NH/PI COVID-19 Needs Assessment Project is a nationally representative cross-sectional survey examining AA and NH/PI experiences during the pandemic in areas such as mental health, discrimination, healthcare access, and economic impacts.

AA and NH/PI individuals aged 18 years and older were recruited to participate. Five Asian ethnic groups were targeted during study recruitment: Chinese, Filipino, Korean, Vietnamese, and South Asian ethnicities (i.e., Indian, Bangladeshi, Nepalese, Pakistani, Sri Lankan, Bhutanese); individuals of other Asian ancestries, although not targeted by the sampling strategy, were not excluded from the survey. The survey was translated from English into the following languages based on recruitment strategy and community partner requests: Bangla, Chinese (traditional and simplified), Hindi, Khmer, Korean, Tagalog, Urdu, and Vietnamese.

A majority (68%) of participants were recruited through community organization events (e.g., vaccination drives, food deliveries) and outreach (e.g., email lists, flyers, word of mouth), and about one-third (32%) was recruited through an online Qualtrics panel [43]. Community organization recruitment was targeted in the following geographic locations: Honolulu, Los Angeles, Chicago, Houston, Portland, Seattle, and Jersey City. The survey was offered online, on paper, and over the phone. Participants completed the survey from January 18 to April 9, 2021. Ethics approval was received from the Association of Asian Pacific Community

Health Organizations (AAPCHO) Institutional Review Board. Informed consent was obtained from participants at the beginning of the survey, and participants were paid via a \$10 gift card or equivalent compensation for panel participants. The survey took an average of 28 min to complete. Two attention checks were included in the survey; participants who failed either attention check were excluded from the final analyses. More detailed information about the survey design can be found in Grills et al. [42].

Current analyses do not include NH/PI study participants because the racialized, Sinophobic, and xenophobic nature of racism during the COVID-19 pandemic warrant racial group-specific examinations. The current study includes a total of 3478 respondents who self-identified as Asian for their race, including multiracial individuals, and who responded to questions on ethnicity or any of the nine Coronavirus Racial Bias Scale (CRBS) items that are included in analyses. A total of 497 respondents (16.5% of the original 3975 respondents) were removed due to missing data on ethnicity (15.6%) or CRBS (0.9%).

Measures

The AA & NH/PI COVID-19 Needs Assessment survey was designed with substantial input from different national and community organizations. The survey included validated and pandemic-related measures and items taken from the US Census Bureau Household Pulse Survey [44], the NIH PhenX Toolkit [45], and items developed in collaboration with community partners. Survey items included the CRBS, an item on facing discrimination, psychological distress, health decline, COVID-19-related stressors, and sociodemographic questions.

Coronavirus Racial Bias Scale (CRBS)

To assess COVID-related collective racism, we used the CRBS, a 9-item measure that examines beliefs about how the COVID-19 pandemic has negatively affected people of one's race/ethnicity [46]. We adapted the wording of the nine CRBS items to be in a question format rather than a statement format. We also changed the last question of the scale to ask about political rhetoric instead of negative social media posts to expand the relevance for groups that might not be social media users. Our adapted version of the CRBS scale can be viewed in Appendix. A sample item includes "Has the U.S. become more physically dangerous for people in your racial/ethnic group because of fear of COVID-19?" Participants responded to items on a 5-point scale, where a higher score indicates more negative impact or racial bias (i.e., 1 = much more positive; 5 = much more negative).

Confirmatory Factor Analysis Using maximum likelihood estimation, we first assessed a one-factor, 9-item structure for the CRBS. We removed three items (5, 6, and 9; refer to Appendix) with low-factor loadings and assessed a second one-factor, 6-item structure. The fit for this model was insufficient, however. We then removed a fourth item with the weakest factor loading (item 4). Model fit indices revealed that this 5-item model had an adequate fit: CFI = 0.923, TLI = 0.846, RMSEA = 0.130 (90% confidence interval (0.117, 0.142)), SRMR = 0.053.

Discrimination

Participants responded to the following multiple-choice item developed with community partners: “How has the COVID-19 pandemic impacted your family’s life?” Participants were able to select *yes* to as many options as they chose. One possible option was “Facing discrimination.” We used this item to measure participants’ experience of facing discrimination as a binary (*yes/no*) variable.

Psychological Distress

We measured psychological distress using the modified Patient Health Questionnaire-4 (PHQ-4) [44, 47], which asks for depression and anxiety symptoms over the last 7 days (rather than 14 days). A sample question includes “Over the last 7 days, how often have you been bothered by the following problems: Feeling nervous, anxious, or on edge.” Response options included the following: *not at all* (0), *several days* (1), *more than half the days* (2), and *nearly every day* (3). To measure psychological distress, we calculated summed scores from the four items.

Health Decline

Participants responded to the following item for both current and before the COVID-19 pandemic: “Would you say your health in general is excellent, very good, good, fair, or poor?” [44]. Response options included (1) *excellent*, (2) *very good*, (3) *good*, (4) *fair*, and (5) *poor*. To measure health decline, we subtracted participants’ current health score from their pre-COVID health score, such that negative scores indicate worsening of health.

COVID-19 Stressors

Participants also responded to a multiple-choice question regarding COVID-19-related stressors [48]. The question reads, “What have been your greatest sources of stress from the COVID-19 pandemic? Select all that apply.” Participants were able to select *yes* to as many options as they chose. Options included a list of possible stressors: physical health

concerns; mental health concerns; financial concerns; housing concerns; transportation concerns; caregiving responsibilities (for example, caring for children, family members); impact on work; impact on your child; impact on your community; impact on family members; access to food; access to baby supplies (e.g., formula, diapers, wipes); access to clean water for hand washing etc.; access to personal care products or household supplies; access to medical care, including mental health care; and social distancing or being quarantined. Selected options were coded as *Yes* (1); unselected options were coded as *No* (0). The individual COVID-19 stressors were used as covariates in later analyses.

Sociodemographic Variables

Participants responded to a variety of demographic questions, including ethnic identity (Chinese, Filipino, Indian, Vietnamese, Korean, Japanese, Pakistani, Cambodian, Other, Multiethnic, or Multiracial), gender identity (man, woman, nonbinary/trans/another gender identity), age (18–24, 25–44, 45–64, > 65), annual household income (< \$25,000, 25,000–\$49,999, 50,000–\$74,999, 75,000–\$99,999, and > \$100,000), education (high school/GED/less than high school, some college, technical certificate or associate’s degree, bachelor’s degree, graduate degree), and the number of years living in the USA (entire life, 15+ years, 5–14 years, and less than 5 years). We categorized respondents who identified with more than one racial group as multiracial. The categories for the ethnic identity variable were mutually exclusive, such that if participants reported being both multiracial and multiethnic, they were counted once as multiracial—and not counted within their identified ethnic group categories. The number of years living in the USA was calculated based on participants’ reported country of birth and subsequently reported the number of years living in the USA if reporting a country of birth other than the USA. Additional variables include survey language (English, Asian language), which was calculated based on the language in which participants completed the survey (English ($n = 3,002$), Chinese ($n = 376$), Korean ($n = 82$), Khmer ($n = 12$), Urdu ($n = 3$), and Vietnamese ($n = 3$)); and the US region, which was calculated based on participants’ reported ZIP codes and categorized according to the four US Census regions (Northeast, Midwest, South, West) [49].

Data Analysis

We used the ranking method to create sample weights matching the Asian population estimates from the 2019 American Community Survey (ACS) 1-Year estimates from the US Census [50]. The 2019 ACS currently provides the most detailed population information for Asian ethnic groups in the USA. Sample weights reflect the representative AA

population in the USA as of 2019 and account for multiracial AAs. Data weights were created based on the following variables: Asian ethnicity, nativity (foreign born vs US born), education, household income, gender identity, and age.

There were less than five missing values for all variables except four—age ($n = 13$; 0.37%), education ($n = 28$; 0.81%), annual household income ($n = 55$; 1.58%), and years in the USA ($n = 22$; 0.63%). To generate the correct parameter estimates, we conducted multiple imputations by chained equations, creating 25 imputed datasets where each variable has its own imputation model [51].

To validate our adapted version of the CRBS (see Appendix) as well as confirm the one-factor structure reported by the scale authors [46], we conducted a confirmatory factor analysis (CFA) on the CRBS scale. Using the confirmed CRBS scale from the CFA, we then conducted weighted, bivariate subgroup analyses to examine differences in discrimination and COVID-related collective racism by ethnic identity, gender identity, age, income, education, years living in the USA, survey language, and the US region. We also computed multivariable logistic and linear regression models to examine the effect of sociodemographic factors on both discrimination and COVID-related collective racism. We report results for the overall model, US-born subsample, foreign-born subsample, women subsample, and men subsample for both variables. Lastly, to examine the relationships both discrimination and COVID-related collective racism have with psychological distress and health decline, we conducted two hierarchical, multivariable linear regression models using weighted data, controlling for sociodemographic factors and COVID-19 stressors. All analyses were conducted in R (v4.0.3 in RStudio v1.4.1106) using the “stats” (v4.0.3), “psych” (v2.1.9), “dplyr” (v1.0.7), “survey” (v4.1–1), “mice” (v3.14.0), weights, (v1.0.4), and “sandwich” (v3.0–1) packages [52–58].

Results

Sociodemographic Subgroup Differences

Table 1 presents sample characteristics, prevalence rates for experiencing discrimination, and means for COVID-related collective racism by sociodemographic factors. Table 2 presents adjusted odds ratios of discrimination by sociodemographic factors. Table 3 presents regression coefficients for COVID-related collective racism by sociodemographic factors.

Discrimination

Table 1 shows that overall, about 24% of AAs reported facing discrimination as an impact of the COVID-19

pandemic. Rates of discrimination significantly differed by ethnicity, age, number of years living in the USA, and survey language. Table 2 shows Chinese had higher odds of experiencing discrimination compared to Filipinos ($aOR = 0.55$), Koreans ($aOR = 0.66$), Indians ($aOR = 0.20$), Pakistanis ($aOR = 0.17$), and multiracial individuals ($aOR = 0.61$; Table 2, Model 1). In addition to the above ethnic differences, Chinese women showed increased odds of discrimination compared to Japanese women ($aOR = 0.19$; Model 4). Chinese men, however, had lower odds of discrimination compared to Vietnamese ($aOR = 1.68$) and Cambodian men ($aOR = 2.18$; Model 5). The overall model did not show any differences by gender. However, among the US-born AAs, nonbinary and trans-AAs showed higher odds of discrimination compared to men ($aOR = 6.95$; Model 2). Both 18–24 ($aOR = 2.26$) and 25–44 ($aOR = 2.35$) age groups showed higher odds of experiencing discrimination compared to those aged 65 and older (Model 1). Among the US-born individuals and men, however, those aged 45–64 had higher odds of discrimination compared to those aged 65 and older (US born ($aOR = 3.08$); Men ($aOR = 2.64$); Models 2 and 5). In the overall model, AAs earning a household income of 50,000 to \$74,999 showed higher odds of discrimination compared to those making \$100,000 or more ($aOR = 1.31$; Model 1). Among men, the lowest income bracket (earning less than \$25,000) showed increased odds of discrimination ($aOR = 1.82$); however, those in the next income bracket (25,000 to \$49,999) had decreased odds of reporting discrimination compared to those making \$100,000 or more ($aOR = 0.63$; Model 5). In the overall sample, AAs with some college experience showed lower odds of discrimination compared to those with a graduate degree ($aOR = 0.65$; Model 1). Among women, however, all without a graduate degree had lower odds of discrimination (HS, GED, or less than HS ($aOR = 0.49$); some college ($aOR = 0.49$); technical or associate’s degree ($aOR = 0.52$); bachelor’s degree ($aOR = 0.62$); Model 4). The overall model did not show any differences in the number of years living in the USA (Model 1); however, among men, those living in the USA for 15 years or longer had lower odds of reporting discrimination compared to recent immigrants ($aOR = 0.50$; Model 5). Additionally, those who completed the survey in an Asian language showed greater odds of discrimination ($aOR = 1.35$; Model 1); this is particularly true for foreign-born individuals ($aOR = 1.38$; Model 3) and women ($aOR = 2.01$; Model 4). Lastly, there were no differences by region in the overall model (Model 1); among women, however, those living in the south had lower odds of discrimination compared to those living in the northeast ($aOR = 0.52$; Model 4).

Table 1 Sample characteristics and bivariate subgroup analyses by discrimination and COVID-related collective racism ($n=3478$)

Correlate subgroup	Overall		Discrimination		COVID-Related Col- lective Racism
	<i>n</i>	Weighted % (95% CI)	<i>n</i>	Weighted % (95% CI)	<i>M</i> ± <i>SD</i>
Totals	3478	100	1004	23.63 (21.62, 25.64)	3.57±0.67
Ethnicity					
Chinese	779	18.87 (17.27, 20.48)	263	29.66 (25.82, 33.50)	3.75±0.63
Filipino	600	13.45 (12.12, 14.78)	154	20.86 (17.09, 24.63)	3.53±0.66
Vietnamese	463	8.45 (7.40, 9.49)	157	34.36 (28.55, 40.17)	3.81±0.65
Korean	460	6.41 (5.66, 7.15)	136	24.23 (19.71, 28.75)	3.63±0.64
Indian	338	18.85 (16.65, 21.05)	38	9.34 (5.83, 12.85)	3.15±0.62
Pakistani	82	2.28 (1.69, 2.87)	6	8.17 (0.95, 15.39)	3.07±0.50
Japanese	59	3.36 (2.35, 4.37)	21	31.64 (17.59, 45.69)	3.65±0.56
Cambodian	42	4.26 (2.74, 5.78)	11	25.91 (9.24, 42.59)	3.66±0.74
Other ¹	110	5.04 (3.87, 6.21)	27	30.72 (19.32, 42.13)	3.68±0.60
Multiethnic ²	273	2.19 (1.78, 2.60)	117	39.25 (29.99, 48.51)	3.97±0.59
Multiracial ³	272	16.85 (14.61, 19.08)	74	25.26 (18.87, 31.65)	3.64±0.63
			$\chi^2=6.59; p<0.001$		$F=46.72; p<0.001$
Gender Identity					
Man	1322	47.31 (44.82, 49.81)	343	22.31 (19.25, 25.37)	3.51±0.65
Woman	2117	51.59 (49.10, 54.08)	644	24.81 (22.15, 27.48)	3.61±0.68
Nonbinary, trans, or other	35	1.09 (0.29, 1.90)	17	27.65 (4.34, 50.97)	3.66±0.82
			$\chi^2=0.70; p=0.493$		$F=20.94; p<0.001$
Age					
18–24	1143	14.16 (12.91, 15.41)	361	26.64 (22.85, 30.42)	3.65±0.67
25–44	1511	42.94 (40.53, 45.35)	492	29.18 (26.14, 32.23)	3.65±0.67
45–64	559	28.88 (26.47, 31.29)	106	17.92 (14.00, 21.84)	3.41±0.62
65 and older	252	14.02 (11.92, 16.13)	43	16.17 (10.04, 22.30)	3.54±0.73
			$\chi^2=8.72; p<0.001$		$F=37.33; p<0.001$
Household Income					
Less than \$25,000	689	14.35 (12.60, 16.10)	218	26.13 (20.52, 31.74)	3.61±0.72
25,000–\$49,999	696	13.39 (12.01, 14.77)	211	24.82 (20.35, 29.28)	3.58±0.64
50,000–\$74,999	538	14.26 (12.64, 15.88)	159	27.36 (21.78, 32.93)	3.51±0.70
75,000–\$99,999	443	12.47 (10.88, 14.06)	122	24.26 (18.27, 30.24)	3.60±0.63
\$100,000 and above	1057	45.53 (43.00, 48.06)	282	21.27 (18.25, 24.29)	3.56±0.68
			$\chi^2=1.39; p=0.235$		$F=0.96; p=0.430$
Education					
HS, GED, or less than HS	529	20.08 (17.77, 22.38)	152	25.73 (19.90, 31.56)	3.56±0.69
Some college	793	9.46 (8.47, 10.45)	321	22.07 (18.23, 25.91)	3.58±0.67
Technical or associate's degree	303	5.28 (4.44, 6.09)	87	24.91 (18.18, 31.63)	3.48±0.61
Bachelor's degree	1113	32.81 (30.60, 35.02)	328	23.91 (20.87, 26.96)	3.60±0.71
Graduate degree	712	32.38 (29.95, 34.82)	201	22.24 (18.54, 25.93)	3.55±0.54
			$\chi^2=0.53; p=0.676$		$F=4.19; p=0.002$
Years in the USA					
Entire life	1825	36.60 (34.37, 38.82)	574	26.26 (23.44, 29.09)	3.71±0.65
15+ years	1017	43.63 (41.11, 46.15)	239	19.89 (16.61, 23.18)	3.49±0.69
5–14 years	487	15.80 (13.98, 17.61)	151	27.72 (22.12, 33.32)	3.49±0.66
Less than 5 years	127	3.97 (3.08, 4.86)	37	28.52 (18.85, 38.19)	3.46±0.58
			$\chi^2=4.03; p=0.008$		$F=27.96; p<0.001$
Survey language					
English	3002	83.96 (81.99, 85.93)	856	22.47 (20.38, 24.56)	3.57±0.69
Asian language	476	16.04 (14.07, 18.01)	148	29.76 (23.70, 35.82)	3.57±0.58

Table 1 (continued)

Correlate subgroup	Overall		Discrimination		COVID-Related Collective Racism
	<i>n</i>	Weighted % (95% CI)	<i>n</i>	Weighted % (95% CI)	<i>M</i> ± <i>SD</i>
			$\chi^2 = 5.75; p = 0.016$		$F = 15.08; p < 0.001$
US region					
Northeast	411	12.43 (10.83, 14.03)	128	24.38 (19.36, 29.40)	3.56 ± 0.69
Midwest	572	17.89 (15.98, 19.79)	150	20.80 (16.49, 25.10)	3.47 ± 0.67
South	642	21.92 (19.86, 23.99)	162	21.11 (17.11, 25.10)	3.45 ± 0.69
West	1850	47.76 (45.28, 50.24)	564	25.74 (22.59, 28.89)	3.66 ± 0.65
			$\chi^2 = 1.69; p = 0.167$		$F = 34.86; p < 0.001$

* $p < .05$; ** $p < .01$; *** $p < .001$

¹Other includes Thai, Indonesian, Laotian, Hmong, Bangladeshi, Burmese, Nepalese, Sri Lankan, Malaysian, Mongolian, Okinawan, and another ethnic identity

²Multiethnic participants self-identified as two or more Asian ethnic groups, examples include Vietnamese-Chinese; Korean-Vietnamese

³Multiracial participants self-identified as at least one Asian ethnic group and a non-Asian race

COVID-Related Collective Racism

Table 1 shows the overall mean was 3.57 for COVID-related collective racism ($SD = 0.67$; range 1–5). According to bivariate analyses, COVID-related collective racism significantly differed by ethnicity, gender, age, education, number of years living in the USA, survey language, and region. Table 3 shows overall, Chinese individuals reported significantly higher collective racism compared to Filipinos ($b = -0.21$), Indians ($b = -0.62$), Pakistanis ($b = -0.71$), and multiracial individuals ($b = -0.20$; Table 3, Model 1). Multiethnic AAs reported significantly higher collective racism compared to Chinese ($b = 0.40$; Model 1). Among the US-born AAs, Chinese reported less collective racism compared to Vietnamese ($b = 0.13$) and Cambodians ($b = 0.50$; Model 2). In addition to the ethnic differences found in the overall model, Chinese women also reported more collective racism compared to Japanese women ($b = -0.46$; Model 4). Overall, women reported more collective racism compared to men ($b = 0.07$; Model 1). Among the US-born AAs, nonbinary and trans individuals reported more collective racism compared to men ($b = 0.71$; Model 2). AAs aged 25–44 reported more collective racism compared to those aged 65 and older ($b = 0.14$; Model 1); this was particularly apparent for foreign-born AAs ($b = 0.21$; Model 3). Those aged 45–64, particularly women, reported less collective racism compared to those aged 65 and older ($b = -0.14$; women ($b = -0.22$); Model 4). Lastly, foreign-born young adults (ages 18–24) reported more collective racism compared to foreign-born adults aged 65 and older ($b = 0.24$; Model 3). Collective racism did not differ by income, with the exception of men whose household earned less than \$25,000 reporting more collective racism compared to the highest income earners ($b = 0.21$; Model 5). Generally, AAs with graduate degrees

reported more collective racism compared to those with less education (HS, GED, or less than HS ($b = -0.18$); some college ($b = -0.17$); technical or associate's degree ($b = 0.18$); bachelor's degree ($b = -0.07$); Model 1); this was particularly apparent among the US-born individuals and women (Models 2 and 4). We found no difference in collective racism by the number of years living in the USA or by survey language in the multiple linear regression model. For the US region, AAs living in the south—particularly women—reported less collective racism compared to those living in the northeast ($b = -0.13$; Women ($b = -0.22$); Model 4).

Impact on Mental and Physical Health

Discrimination and COVID-related collective racism were independently associated with both mental and physical health. Specifically, experiences of discrimination and COVID-related collective racism were associated with increased psychological distress, above and beyond sociodemographic factors, and other COVID-related stressors (see Table 4). In the case of physical health decline, both discrimination and COVID-related collective racism were associated with worse self-reported health, above and beyond sociodemographic factors, and other COVID-related stressors (see Table 4). However, discrimination was not significantly associated with physical health once COVID-related collective racism was added to the regression model.

Interaction Effects

We found no interaction effects between discrimination and COVID-related collective racism for either psychological distress or health decline in the regression analysis.

Table 2 Logistic regression models of discrimination for Asian American sample including stratified analysis models ($n = 3478$)

Correlate Subgroup	Model 1: overall ($n = 3478$)	Model 2: US Born ($n = 1825$)	Model 3: foreign born ($n = 1631$)	Model 4: women ($n = 2117$)	Model 5: men ($n = 1322$)
	aOR (95% CI)	aOR (95% CI)	aOR (95% CI)	aOR (95% CI)	aOR (95% CI)
Ethnicity					
Chinese	Ref	Ref	Ref	Ref	Ref
Filipino	0.55 (0.41, 0.74)***	0.67 (0.41, 1.09)	0.49 (0.34, 0.71)***	0.50 (0.34, 0.74)***	0.64 (0.40, 1.02)
Vietnamese	1.08 (0.79, 1.46)	1.19 (0.74, 1.90)	0.98 (0.64, 1.49)	0.79 (0.51, 1.21)	1.68 (1.05, 2.68)*
Korean	0.66 (0.46, 0.95)*	1.05 (0.56, 1.97)	0.55 (0.35, 0.88)*	0.56 (0.33, 0.92)*	0.75 (0.43, 1.32)
Indian	0.20 (0.14, 0.27)***	0.29 (0.17, 0.50)***	0.15 (0.10, 0.23)***	0.14 (0.08, 0.24)***	0.30 (0.19, 0.47)***
Pakistani	0.17 (0.07, 0.39)***	0.09 (0.01, 0.60)*	0.21 (0.08, 0.54)**	0.09 (0.02, 0.36)***	0.36 (0.12, 1.06)
Japanese	0.78 (0.49, 1.24)	0.59 (0.21, 1.64)	0.86 (0.49, 1.48)	0.19 (0.08, 0.45)***	1.24 (0.65, 2.37)
Cambodian	0.88 (0.54, 1.44)	1.23 (0.23, 6.49)	0.79 (0.46, 1.37)	0.55 (0.27, 1.12)	2.18 (1.03, 4.62)*
Other	0.82 (0.57, 1.20)	0.62 (0.30, 1.30)	0.86 (0.55, 1.34)	1.07 (0.63, 1.80)	0.51 (0.27, 0.97)*
Multietnic	1.30 (0.79, 2.16)	1.41 (0.71, 2.28)	1.17 (0.54, 2.57)	1.02 (0.52, 1.97)	2.24 (0.98, 5.16)
Multiracial	0.61 (0.47, 0.80)***	0.64 (0.44, 0.95)*	0.65 (0.43, 0.98)*	0.66 (0.45, 0.95)*	0.62 (0.40, 0.97)*
Gender Identity					
Man	Ref	Ref	Ref	–	–
Woman	1.10 (0.93, 1.30)	1.18 (0.89, 1.55)	1.12 (0.90, 1.39)	–	–
Nonbinary, trans, or other	1.11 (0.52, 2.34)	6.95 (1.67, 28.85)**	1.25 (0.40, 3.93)	–	–
Age					
18–24	2.26 (1.56, 3.28)***	4.11 (1.85, 9.14)***	1.81 (1.09, 3.00)*	1.20 (1.19, 3.31)**	2.62 (1.41, 4.89)**
25–44	2.35 (1.74, 3.18)***	4.72 (2.17, 10.28)***	1.97 (1.28, 2.80)***	1.46 (0.94, 2.25)	4.14 (2.51, 6.84)***
45–64	1.17 (0.86, 1.59)	3.08 (1.37, 6.93)**	0.87 (0.61, 1.23)	0.67 (0.43, 1.06)	2.64 (1.60, 4.37)***
65 and older	Ref	Ref	Ref	Ref	Ref
Annual household income					
Less than \$25,000	1.17 (0.88, 1.56)	1.27 (0.78, 2.07)	1.04 (0.72, 1.50)	0.74 (0.48, 1.12)	1.82 (1.18, 2.82)**
25,000–\$49,999	0.97 (0.74, 1.27)	1.28 (0.84, 1.94)	0.78 (0.54, 1.12)	1.34 (0.93, 1.92)	0.63 (0.41, 0.99)*
50,000–\$74,999	1.31 (1.02, 1.68)*	1.25 (0.85, 1.82)	1.24 (0.88, 1.75)	1.21 (0.85, 1.73)	1.36 (0.93, 1.97)
75,000–\$99,999	1.24 (0.95, 1.63)	1.16 (0.76, 1.76)	1.28 (0.90, 1.84)	1.30 (0.90, 1.90)	0.99 (0.67, 1.50)
\$100,000+	Ref	Ref	Ref	Ref	Ref
Education					
HS, GED, or less than HS	0.80 (0.60, 1.07)	1.10 (0.66, 1.85)	0.74 (0.51, 1.07)	0.49 (0.32, 0.75)**	1.23 (0.79, 1.91)
Some college	0.65 (0.45, 0.92)*	0.85 (0.50, 1.42)	0.57 (0.34, 0.95)*	0.49 (0.30, 0.80)**	0.81 (0.46, 1.40)
Technical or associate's degree	0.80 (0.54, 1.18)	1.01 (0.51, 1.98)	0.67 (0.41, 1.10)	0.52 (0.30, 0.93)*	1.20 (0.67, 2.14)
Bachelor's degree	0.83 (0.67, 1.03)	1.17 (0.83, 1.64)	0.66 (0.50, 0.88)**	0.62 (0.46, 0.83)**	1.17 (0.84, 1.63)
Graduate degree	Ref	Ref	Ref	Ref	Ref
Years in the USA					
Entire life	0.86 (0.55, 1.33)	–	–	0.96 (0.46, 2.00)	0.69 (0.38, 1.26)
15+ years	0.76 (0.50, 1.18)	–	0.71 (0.45, 1.11)	1.03 (0.50, 2.14)	0.50 (0.27, 0.90)*
5–14 years	0.92 (0.60, 1.43)	–	0.89 (0.57, 1.39)	1.03 (0.49, 2.14)	0.97 (0.54, 1.74)
Less than 5 years	Ref	–	Ref	Ref	Ref
Survey language					
English	Ref	Ref	Ref	Ref	Ref
Asian language	1.35 (1.04, 1.77)*	1.81 (0.84, 3.93)	1.38 (1.02, 1.86)*	2.01 (1.31, 3.07)**	1.23 (0.83, 1.81)
US region					
Northeast	Ref	Ref	Ref	Ref	Ref
Midwest	0.96 (0.70, 1.33)	1.07 (0.61, 1.88)	0.90 (0.60, 1.33)	0.65 (0.41, 1.01)	1.39 (0.84, 2.31)
South	0.75 (0.55, 1.02)	0.87 (0.52, 1.46)	0.69 (0.47, 1.01)	0.52 (0.34, 0.79)**	1.19 (0.75, 1.89)
West	0.92 (0.70, 1.20)	1.00 (0.65, 1.54)	0.87 (0.61, 1.25)	0.75 (0.51, 1.10)	1.27 (0.83, 1.93)

* $p < .05$; ** $p < .01$; *** $p < .001$

Odds ratio calculations are adjusted by all demographic correlates (i.e., ethnicity, gender identity, age, annual household income, education, years in the USA, survey language, and US region)

aOR, adjusted odds ratio; CI, confidence interval

However, a simple two-group ANOVA showed AAs who experienced discrimination reported higher levels of COVID-related collective racism ($M=4.11$) compared to AAs who did not experience discrimination ($M=3.53$, $F(1, 3475)=634.9$, $p < 0.001$).

Discussion

Given that AAs comprise diverse groups across multiple domains, it is important to understand both the sociodemographic characteristics and contexts that increase individuals' risk of experiencing discrimination and COVID-related collective racism and their links with mental and physical health. In the present study, we found that some AA subgroups are more likely to report COVID-related discrimination and collective racism compared to other groups. These subgroups with increased risk are reflective of societal biases that stereotype AAs as perpetual foreigners (i.e., not *real* Americans, being from somewhere else) and blame AAs (specifically Chinese) for the COVID-19 pandemic. Additionally, findings confirm a large body of research indicating the negative mental and physical health impacts of racism for AAs [26, 29–33]. Our findings also confirm that both discrimination and COVID-related collective racism are distinct forms of racism experienced by AAs [26]. These distinct forms of racism are associated with greater rates of psychological distress and physical health decline for AAs. Furthermore, our study fills a gap in the research literature with our finding that even non-direct forms of racism (i.e., COVID-related collective racism) can negatively impact physical health for AAs [9, 26].

As hypothesized based on previous data [14] and the Sinophobic emphasis of COVID-related anti-Asian racism, Chinese reported some of the highest rates of discrimination and scores of COVID-related collective racism. However, Cambodian and Vietnamese men reported greater rates of discrimination, and multiethnic men reported more COVID-related collective racism, compared to Chinese men. These unexpected findings warrant further investigation.

Although some studies found higher reporting of discrimination among women [15], our study is consistent with 2022 data from Momentive and AAPI Data [58]: rates of discrimination are generally consistent for AA men and women. We did, however, find that women reported more COVID-related collective racism compared to men.

Other less researched sociodemographic factors seem to place individuals at risk for discrimination and COVID-related collective racism as well as increased negative mental and physical health symptoms. For example, younger participants (ages 18–24 and 25–44) reported more discrimination and collective racism compared to participants over 45 years old. Men with a lower income may be more likely

to experience discrimination and collective racism; however, this is not the case for lower-income women. Women with a graduate degree experienced less discrimination and collective racism compared to women with less education. Additionally, recent immigration for men and completing the survey in an Asian language—a proxy for English proficiency or preference—are associated with experiencing discrimination. Lastly, similar to pre-COVID research which found AAs in the northeast experienced more discrimination compared to those living in the west [59], our study found that women living in the northeast experienced more discrimination and collective racism compared to women living in the south.

Experiences of discrimination and COVID-related collective racism are distinct with separate risks pertaining to sociodemographic and contextual factors. For example, although we found no gender differences in discrimination, women reported more COVID-related collective racism compared to men. Additionally, recent immigration and English proficiency/preference impacted discrimination risk but not collective racism.

There are many possible reasons for noted sociodemographic differences in reported discrimination and collective racism, many of which are tied to intersecting privilege and oppressions. For example, working-age and immigrant AAs, particularly those with limited English-language ability and educational attainment, are more likely to work in essential high-risk jobs that not only placed them at greater risk for exposure to COVID-19 [60], but also racism, by virtue of being in public rather than home. Given the xenophobic nature of COVID-related racism toward AAs, those with limited English-language skills may be greater targets of discrimination during the pandemic. Younger adult AAs are more likely to use social media [37], increasing their risk of exposure to online discrimination directed toward them or their racial/ethnic group. It is also possible that factors such as racial literacy or “the ability to read, recast, and resolve racially stressful social interactions,” [61] different coping styles in response to racism, and comfort discussing and reporting racism may vary among AA subgroups and contribute to observed differences in rates of discrimination and COVID-related collective racism experiences, though more research must be conducted to explore this. Intersectional oppressions, such as gendered racism and economic insecurity among older immigrant AAs, also shape the ways in which interpersonal discrimination and structural racism are experienced across different AA subgroups.

Strengths, Limitations, and Future Research

The present study is the first, to our knowledge, to examine the unique contributions of discrimination and

Table 3 Linear regression models of COVID-related collective racism for Asian American sample including stratified analysis models ($n = 3478$)

Correlate Sub-group	Model 1: overall ($n = 3478$)		Model 2: US born ($n = 1825$)		Model 3: foreign born ($n = 1631$)		Model 4: women ($n = 2117$)		Model 5: men ($n = 1322$)	
	B	95% CI	B	95% CI	B	95% CI	B	95% CI	B	95% CI
Ethnicity										
Chinese	Reference group	Reference group	Reference group	Reference group	Reference group	Reference group	Reference group	Reference group	Reference group	Reference group
Filipino	-0.21	-0.30, -0.12***	-0.14	-0.26, -0.02*	-0.25	-0.37, -0.13***	-0.35	-0.46, -0.24***	-0.09	-0.23, 0.05
Vietnamese	0.02	-0.08, 0.13	0.13	0.02, 0.24*	-0.06	-0.21, 0.10	-0.10	-0.22, 0.01*	0.11	-0.06, 0.27
Korean	-0.12	-0.22, -0.03*	-0.02	-0.13, 0.10	-0.18	-0.31, -0.05	-0.23	-0.36, -0.10***	-0.04	-0.18, 0.10
Indian	-0.62	-0.73, -0.51***	-0.66	-0.80, -0.52***	-0.61	-0.75, -0.47	-0.82	-0.94, -0.70***	-0.44	-0.60, -0.28***
Pakistani	-0.71	-0.85, -0.56***	-0.83	-1.08, 0.58***	-0.65	-0.84, -0.47	-0.76	-0.96, -0.56***	-0.64	-0.85, -0.43***
Japanese	-0.12	-0.30, 0.05	0.18	-0.13, 0.49	-0.30	-0.52, -0.09	-0.46	-0.71, -0.22***	0.05	-0.21, 0.31
Cambodian	-0.02	-0.30, 0.26	0.50	0.18, 0.82**	-0.06	-0.37, 0.24	-0.19	-0.52, 0.14	-0.16	-0.31, 0.63
Other	-0.10	-0.24, 0.03	-0.11	-0.34, 0.11	-0.14	-0.30, 0.02	-0.17	-0.36, 0.03	-0.12	-0.30, 0.06
Multithnic	0.14	0.01, 0.26*	0.05	-0.07, 0.18	0.28	0.07, 0.49*	-0.06	-0.21, 0.10	0.36	0.17, 0.56***
Multiracial	-0.20	-0.30, -0.09***	-0.12	-0.24, -0.01*	-0.31	-0.49, -0.12***	-0.30	-0.43, -0.18***	-0.10	-0.28, 0.08
Gender identity										
Man	Reference group	Reference group	Reference group	Reference group	Reference group	Reference group	Reference group	Reference group	Reference group	Reference group
Woman	0.07	0.01, 0.13*	0.13	0.05, 0.21**	0.03	-0.05, 0.12	-	-	-	-
Nonbinary, trans, or other	0.12	-0.33, 0.57	0.71	0.37, 1.05***	0.21	-0.34, 0.76	-	-	-	-
Age										
18-24	0.14	0.00, 0.27	0.10	-0.09, 0.29	0.24	0.05, 0.43*	0.11	-0.06, 0.28	0.12	-0.09, 0.34
25-44	0.14	0.01, 0.26*	0.13	-0.05, 0.32	0.21	0.05, 0.36*	0.10	-0.04, 0.24	0.16	-0.04, 0.36
45-64	-0.14	-0.28, -0.01*	-0.02	-0.22, 0.18	-0.15	-0.30, 0.01	-0.22	-0.37, -0.07**	-0.03	-0.24, 0.18
65 and older	Reference group	Reference group	Reference group	Reference group	Reference group	Reference group	Reference group	Reference group	Reference group	Reference group
Annual household income										
Less than \$25,000	0.04	-0.06, 0.14	0.03	-0.11, 0.17	0.02	-0.11, 0.16	-0.13	-0.25, -0.02*	0.21	0.06, 0.36**
25,000-\$49,999	-0.01	-0.10, 0.07	-0.03	-0.14, 0.09	-0.04	-0.16, 0.07	-0.06	-0.17, 0.04	0.01	-0.11, 0.14
50,000-\$74,999	-0.05	-0.14, 0.05	0.02	-0.10, 0.15	-0.12	-0.25, 0.00	-0.07	-0.17, 0.04	-0.08	-0.23, 0.07
75,000-\$99,999	0.07	-0.02, 0.16	0.05	-0.06, 0.15	0.07	-0.06, 0.19	0.10	-0.01, 0.21	-0.01	-0.14, 0.11
\$100,000+	Reference group	Reference group	Reference group	Reference group	Reference group	Reference group	Reference group	Reference group	Reference group	Reference group
Education										
HS, GED, or less than HS	-0.18	-0.29, -0.07*	-0.18	-0.36, 0.00*	-0.12	-0.26, 0.02	-0.18	-0.32, -0.04*	-0.16	-0.32, 0.01

Table 3 (continued)

Correlate Sub-group	Model 1: overall (n = 3478)		Model 2: US born (n = 1825)		Model 3: foreign born (n = 1631)		Model 4: women (n = 2117)		Model 5: men (n = 1322)	
	B	95% CI	B	95% CI	B	95% CI	B	95% CI	B	95% CI
Some college	-0.17	-0.28, -0.06*	-0.18	-0.32, -0.03*	-0.11	-0.28, 0.06	-0.16	-0.29, -0.04*	-0.16	-0.34, 0.02
Technical or associate's degree	-0.18	-0.29, -0.07*	-0.21	-0.40, -0.03*	-0.14	-0.28, 0.00	-0.25	-0.38, -0.12***	-0.12	-0.30, 0.06
Bachelor's degree	-0.07	-0.14, 0.00	-0.11	-0.21, -0.01*	-0.03	-0.12, 0.07	-0.09	-0.18, 0.00	-0.04	-0.15, 0.08
Graduate degree	Reference group	Reference group	Reference group	Reference group	Reference group	Reference group	Reference group	Reference group	Reference group	Reference group
Years in the USA										
Entire life	0.15	0.00, 0.29	-	-	-	-	0.20	-0.03, 0.43	0.07	-0.11, 0.24
15+ years	0.03	-0.12, 0.18	-	-	0.10	-0.06, 0.25	0.10	-0.14, 0.33	-0.06	-0.24, 0.12
5-14 years	-0.01	-0.15, 0.14	-	-	0.02	-0.13, 0.16	0.01	-0.22, 0.24	0.00	-0.17, 0.18
Less than 5 years	Reference group	Reference group	Reference group	Reference group	Reference group	Reference group	Reference group	Reference group	Reference group	Reference group
Survey language										
English	Reference group	Reference group	Reference group	Reference group	Reference group	Reference group	Reference group	Reference group	Reference group	Reference group
Asian language	0.06	-0.05, 0.16	-0.13	-0.29, 0.03	0.11	-0.01, 0.23	0.13	-0.02, 0.28	0.03	-0.12, 0.18
U.S. region										
Northeast	Reference group	Reference group	Reference group	Reference group	Reference group	Reference group	Reference group	Reference group	Reference group	Reference group
Midwest	-0.03	-0.14, 0.09	0.01	-0.14, 0.16	-0.02	-0.18, 0.13	-0.12	-0.24, 0.00	0.10	-0.09, 0.28
South	-0.13	-0.24, -0.01*	-0.10	-0.25, 0.05	-0.12	-0.27, 0.04	-0.22	-0.35, -0.10***	0.01	-0.18, 0.19
West	0.02	-0.08, 0.12	0.03	-0.08, 0.15	0.12	-0.12, 0.16	0.02	-0.09, 0.12	0.08	-0.08, 0.24

* $p < .05$; ** $p < .01$; *** $p < .001$

Regression estimates control for all demographic correlates (i.e., ethnicity, gender identity, age, annual household income, education, years in the USA, survey language, and US region) CI confidence interval

Table 4 Nested hierarchical linear regression models of psychological distress and physical health decline ($n = 3478$)

	B	SE	<i>t</i> value	95% CI	Fit	Difference
Psychological Distress						
Discrimination (yes)	0.78	0.16	5.03	0.48, 1.09 ***	$R^2 = 0.35$ 95% CI (0.33, 0.38)	
Discrimination (yes)	0.60	0.16	3.62	0.28, 0.92***		
COVID-related collective racism	0.42	0.13	3.34	0.17, 0.67***	$R^2 = 0.36$ 95% CI (0.33, 0.38)	$\Delta R^2 = 0.01; p < 0.001$
Discrimination (yes)	0.63	0.18	3.41	0.27, 0.98***		
COVID-Related Collective Racism	0.45	0.14	3.14	0.17, 0.73**		
Discrimination X COVID-related collective racism	-0.11	0.29	-0.39	-0.68, 0.46	$R^2 = 0.36$ 95% CI (0.33, 0.38)	$\Delta R^2 = 0.00; p = 0.507$
Health decline						
Discrimination (yes)	-0.12	0.05	-2.21	-0.23, -0.01*	$R^2 = 0.10$ 95% CI (0.08, 0.12)	
Discrimination (yes)	-0.07	0.06	-1.24	-0.18, 0.04		
COVID-related collective racism	-0.12	0.04	-3.32	-0.19, -0.05***	$R^2 = 0.10$ 95% CI (0.09, 0.12)	$\Delta R^2 = 0.00; p < 0.001$
Discrimination (yes)	-0.05	0.06	-0.82	-0.17, 0.07		
COVID-related collective racism	-0.10	0.04	-2.83	-0.18, -0.03**		
Discrimination X COVID-related collective racism	-0.08	0.10	-0.82	-0.28, 0.11	$R^2 = 0.10$ 95% CI (0.09, 0.12)	$\Delta R^2 = 0.00; p = 0.120$

* $p < .05$; ** $p < .01$; *** $p < .001$

Coefficients for health decline are consistent with hypothesis: a negative health score indicates more health decline. Analyses controlled for ethnicity, gender identity, age, education, household income, number of years living in the USA, survey language, US geographical region, and the following COVID-19 stressors: physical health, mental health, finances, housing, transportation, caregiving, impact on work, impact on children, impact on community, impact on family, access to food, access to baby supplies, access to personal products, and access to medical care including mental health, social distancing, or being quarantined

CI confidence interval

COVID-related collective racism on the mental and physical health for AAs. Furthermore, we validated an adapted Coronavirus Racial Bias Scale (CRBS) in an AA sample, a novel contribution to the literature.

Because we conducted secondary data analyses, however, we were limited by the measures we could incorporate into our analyses. For example, we used a one-item, binary question to measure discrimination, which may have contributed to the lower rate of discrimination we found overall for AAs. Future research should examine possible interactions between discrimination and COVID-related collective racism on psychological distress and physical health using a more robust, multi-item measure of discrimination. Additionally, our recruitment methods did not target all Asian ethnic groups; therefore, our subgroup findings are limited to the ethnic groups for which we had a large enough subsample. Future research should investigate ethnic differences

in discrimination and COVID-related collective racism to further understand the experiences of various Asian ethnic groups. Relatedly, some of our subgroups were quite small in number (i.e., Cambodians; Nonbinary, Trans, and Other gender-identified AAs). Although we incorporated data weights into our analyses, these smaller subgroups may have resulted in biased estimates, including bias from possible type I error especially considering our use of multiple tests. The present study is also limited in its cross-sectional view of racism's impact on mental and physical health; we cannot conclude longitudinal or causal relationships based on these data.

Future research that examines the long-term mental and physical health impacts of discrimination and COVID-related collective racism for AAs would be beneficial. Future research would also benefit from further understanding associations between discrimination and COVID-related collective racism on mental and physical health—and risk and

protective factors of these associations—for vulnerable AA subgroups identified in this study, such as Cambodian and Vietnamese men, multiethnic men, younger adults, women, low-income individuals, and foreign-born individuals.

Implications for Policy and Practice

By highlighting the diverse experiences of AAs during the COVID-19 pandemic, our findings point to the widespread nature of discrimination and collective racism and the serious consequences of racism on health and mental health. Although legislation such as the 2021 COVID-19 Hate Crimes Act signed into law by President Joseph Biden aims to improve reporting of hate crimes, multilevel policies are needed to address root causes of anti-Asian racism. For example, social and mass media can help reduce the racist messages that have perpetuated Sinophobic- and anti-Asian racism during COVID-19 and increase its representations of AAs in general. Increasing the understanding of AA histories and communities in K-12 education is another important avenue to reduce racism toward AAs. Bystander trainings can help empower everyone—not just AAs—to take action to stop hate incidents. The current study's findings also point to high-risk subgroups for whom interventions to alleviate the mental and physical health impacts of racism may be targeted. Interventions such as the Healing Ethno and Racial Trauma (HEART) that focuses on helping Latinx individuals cope with ethno-racial trauma and resist systemic oppression may be adaptable for AA individuals [62]. Interventions to address racism and its harms must be intersectional and account for how axes of gender, age, immigration status, socioeconomic status, education, and other sociodemographic factors come together to distinctly shape AAs' experiences with racism. Finally, the development of new policies, practices, and research must be inclusive of the AA communities who are experiencing racism, as they possess critical culturally grounded strengths and assets that can be harnessed for effective change.

Conclusions

Although the experiences of anti-Asian racism—both discrimination and COVID-related collective racism—are widespread, these experiences impact AAs differently based on sociodemographic factors, such as ethnic identity, gender, age, number of years living in the USA, and English proficiency/preference. Experiences of both discrimination and COVID-related collective racism are associated with negative mental and physical health impacts for AAs; therefore, understanding which subgroups of AAs may be most vulnerable to discrimination and COVID-related

racism can direct the efforts of policymakers, healthcare providers, and researchers to address the negative health impacts of racism and promote healing. Furthermore, we need change to policies and practices to better address racism as a public health threat.

Appendix

Adapted Coronavirus Racial Bias Scale (CRBS) Items

Please answer the following questions on your beliefs about how COVID-19 is affecting people of your race/ethnicity.

1. Has the USA become more physically dangerous for people in your racial/ethnic group because of fear of COVID-19? (*reverse coded*)

- (1) Much more dangerous
- (2) Slightly more dangerous
- (3) Not more dangerous
- (4) Slightly less dangerous
- (5) Much less dangerous

2. Because of COVID-19, how likely are people of your race/ethnicity to lose their jobs? (*reverse coded*)

- (1) Much more likely
- (2) Slightly more likely
- (3) Not more likely
- (4) Slightly less likely
- (5) Much less likely

3. How often do you worry about people thinking you have COVID-19 simply because of your race/ethnicity? (*reverse coded*)

- (1) Constantly
- (2) Very often
- (3) Somewhat often
- (4) Rarely
- (5) Never

4. How much do social and mass media reports about COVID-19 change attitudes against people of your racial/ethnic group?

- (1) Much more positive
- (2) Slightly more positive
- (3) No change
- (4) Slightly more negative
- (5) Much more negative

5. Compared to other groups, what is the risk of getting COVID-19 for people of your race/ethnicity? (*reverse coded*)

- (1) Much more likely
- (2) Slightly more likely
- (3) Not more likely
- (4) Slightly less likely
- (5) Much less likely

6. Compared to other groups, how is the quality of COVID-19 healthcare for people of your race/ethnicity?

- (1) Much better
- (2) Slightly better
- (3) Not better/the same
- (4) Slightly worse
- (5) Much worse

7. Due to COVID-19, how often have you been cyberbullied because of your race/ethnicity?

- (1) Never
- (2) One or two times
- (3) Two or three times a month
- (4) Once a week
- (5) Nearly every day

8. Since COVID-19, have you seen a change in the amount of cyberbullying of people of your race/ethnicity? (*reverse coded*)

- (1) Greatly increased
- (2) Slightly increased
- (3) No change
- (4) Slightly decreased
- (5) Greatly decreased

9. How much does what politicians say (i.e., political rhetoric) about COVID-19 create bias against people of your racial/ethnic group? (*reverse coded*)

- (1) Strongly increase bias
- (2) Slightly increase bias
- (3) No effect
- (4) Slightly decrease bias
- (5) Strongly decrease bias

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Declarations

Ethics Approval This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the Associa-

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